Rehabilitation Protocols

Therapists: Please contact Dr. Yen Shipley for any questions regarding these protocols. As you know, each patient is different, and we may need to modify the protocols to individualize the therapy. Thank you for being a part of our team and working towards full function in our patients!

Achilles Repair

- Week 0: NWB in boot, with wedge
- Week 1: WBAT in boot, with wedge
- Week 2: sutures out, start AROM, very gentle PROM in PF and active DF
- Week 3-4: start to remove wedged segments until neutral
- Week 6: WBAT in boot, flat, then start to transition to regular shoe, start no-resistance stationary bike and swimming, progressive strengthening

Quad/Patellar Tendon Repair

- s/p patella repair/extensor mechanism (patellar/quad tendon) repair. WBAT in Extension in brace. Progressive increase in flexion by 30 degrees every 2 weeks.
- Week 0-1: 0-30 degrees. Goal full flexion week 8.

Fulkerson/MPFL Reconstruction

- TTWB in Extension in brace. Progressive increase in flexion by 30 degrees every 2 weeks.
- After week 6, progress past 90 degrees flexion toward full flexion
- WBAT after XR shows healed Fulkerson osteotomy or after 6 weeks MPFL only
- No closed chain exercises x 6 weeks

ACL Reconstruction

- Week 1: TTWB brace locked in extension, may unlock for positioning and PT. Start quad/ham sets, SLR, hip abd/ext, ankle pump, passive knee ext/flex, patellar mob. Progress to active knee flex, add toe raises, hip adduct/ext after 1w.
- Weeks 2-4: WBAT (unless meniscal repair – then NWB 4w) with brace in EXT, unlock for positioning/PT. Wean crutches. Goal ROM 0-120.
- Weeks 5-8: unlock brace for ambulation when quad control returns. Full passive flex/ext. Unlimited ROM. Increase closed chain exercises, high rep/low load. Goal ROM 0-135.
- Weeks 9-12: Cont closed chain, balance/proprioception, bike conditioning, straight running.
- 4 mo: Add cutting drills.
- 9 mo+: Full sport.

ACL, MCL, Meniscus Repair

- Week 1: TTWB brace locked in extension, may unlock for positioning and PT. Start quad/ham sets, SLR, hip sbd/ext, ankle pump, passive knee ext/flex, patellar mob. Progress to active knee flex, hip adduct/ext. Limit ROM 0-90.
- Weeks 2-6: TTWB unlock brace for ambulation. Incr closed chain exercises, high rep/low load. ROM 0-90.
- Weeks 6-12: Start WBAT, wean crutches, add stationary bike at 6w. Progress to full ROM. Cont closed chain, balance/proprioception.
- Weeks 9-12: Cont closed chain, balance/priproception, bike conditioning, and straight running.
- 4-5 mo: Start light jog-walk intervals.
- 5 mo: Start squat, squat+lifting, and cross-leg sitting (avoid until 5 mo).
- 9 mo+: Minimum for full sport (when cleared by MD).

Meniscus Repair/Root Repair

- Week 1-4: TTWB brace locked in extension, may unlock for positioning and PT. Start quad/ham sets, SLR, hip sbd/ext, ankle pump, passive knee ext/flex, patellar mob. Progress to active knee flex, hip adduct/ext. Limit ROM 0-90.
- Weeks 4-9: Start WBAT, wean crutches, add stationary bike at 6w. Progress to full ROM. Incr closed chain exercises, high rep/low load, balance/proprioception.
- Weeks 9-12: Cont closed chain, balance/priprioception, bike conditioning, and straight running. Progress to squat, squat+lifting.

Knee Arthroscopy, Partial Meniscectomy

- WBAT
- ROM as tolerated
- Wean crutches as gait allows
- Progressive strengthening and return to sport

Distal Biceps Repair

- Splint/brace in 90 degrees of flexion and neutral rotation until first post op visit.
- Hinged elbow brace at 90 degrees of flexion at first post op visit.
- Start PROM and AAROM after first post op, goal is 30 degrees to full flexion by 6 weeks post op.
- Unrestricted motion and strengthening starting at 6 weeks post op.
- Return to unrestricted activities at 16-20 weeks post op.

Rotator Cuff Repair

- Week 0: Active ROM elbow/wrist/hand. Pendulum exercises. Abduction sling until week 3.
    - Small tear:
        - Week 1: start supine PROM and progress to upright
    - Large tear:

        - Week 3: start supine PROM and progress to upright
- Week 8: start AAROM and AROM
- Week 12: start strengthening

Biceps Tenotomy or Tenodesis

- Week 0: Start AROM elbow/wrist/hand, pendulums
- Week 6: Start gentle weighted work for biceps and progressively increase

Labral Repair

- Week 0-2: No active ER/ext/abd. Sling 2 weeks. Elbow/hand ROM. PROM/AAROM flexion 60deg, elev in scap plane 60 deg, ER/IR w/ 20deg of adb, ER to 10 deg, IR to 45 deg.
- Weeks 3-4: PROM/AAROM flex to 90 deg, abd to 75 deg, ER to 20, IR to 60.
- Weeks 5-6: cont PROM/AAROM flexion 135 deg, ER 30 deg, and IR 60 deg at 45 deg of adb. Start stretching exercises.
- Week 12: start strengthening

Pectoralis Repair

- Weeks 0-2: Immobilizer 24/7, elbow/wrist/hand ROM only
- Weeks 2-6: PROM 90 deg flexion/45 deg ER/20 deg ext/45 deg abd, daytime immobilizer only, start codmans, posterior capsule mobilization, avoid anterior capsule stretch
- Weeks 6-12: AROM/AAROM/PROM to tolerance, goal full ER/135 deg flexion/120 deg abduction. Start resisted closed chain scap stabilizers, biceps, triceps, cuff. Delt/cuff isometrics at 8 weeks. No resisted IR/adduction.
- Weeks 12-16: full motion, start muscle endurance, running
- 4-6 months: Aggressive strengthening, ploymetrics, throwing program
- 5-6 months: Full return to sport

TSA & Shoulder Hemiarthroplasty

This protocol is a guideline for the postoperative rehabilitation course of a patient that has undergone a total shoulder arthroplasty (TSA) or hemiarthroplasty. It is not intended to be a substitute for appropriate clinical decision-making regarding the progression of a patient's postoperative course. The actual post surgical physical therapy management must be based on the surgical approach, physical exam/findings, individual progress, and/or the presence of postoperative complications. If a therapist requires assistance in the progression of a postoperative patient, they should consult with Dr. Yen Shipley.

Phase I – Immediate Post Surgical (0-4 Weeks)

- **Goals:**
    - Soft tissue healing.
    - Maintain integrity of replaced joint.
    - Gradually increase passive range or motion (PROM) of shoulder; restore active range of motion (AROM) of elbow/wrist/hand.
    - Diminish pain and inflammation.
    - Independent with activities of daily living (dressing, bathing, etc) with modifications while maintaining the integrity of the replaced joint.
- **Precautions:**
    - Sling should be worn for 1 week, then for comfort only.
    - Use sling when sleeping and when out in public for first week. Remove sling gradually over the week to move the elbow, wrist, and hand.
    - While lying supine (on the back), a small pillow or towel roll should be placed behind elbow to avoid shoulder hyperextension/anterior capsule/subscapularis stretch.
    - You may do activities like "drinking a cup of coffee or reading the paper" immediately following surgery, but no lifting objects heavier than a coffee cup.
    - No excessive shoulder motion behind the back.
    - No excessive stretching or sudden movements (particularly external rotation).
    - No supporting of body weight by hand on operative side (i.e. pushing up from a chair).
    - No driving until off of all narcotic medication.
- **Criteria for progression to the next phase:**

    - Tolerates PROM program.
    - >90 degrees PROM flexion.
    - >90 degrees PROM abduction.
    - >45 degrees PROM ER in plane of scapula.
    - >70 degrees PROM IR in plane of scapula.
    - Be able to isometrically activate all shoulder, RC, and upper back musculature.
- **Postoperative Day #1 (in hospital):**
    - Passive forward flexion in supine to tolerance.
    - ER in scapular plane to available gentle PROM (as documented in operative note). Avoid undue stress on the anterior joint capsule and subcapularis particularly with the shoulder in extension.
    - Passive IR to chest.
    - Active distal extremity exercise (hand, elbow, wrist).
    - Pendulums.
    - Frequent cryotherapy for pain, swelling, and inflammation.
    - Patient education regarding proper positioning and joint protection techniques.
- **Postoperative Day #2-10:**
    - Continue above exercise.
    - Assisted flexion and abduction in the scapular plane.
    - Assisted external rotation.
    - Begin sub-maximal, pain-free shoulder isometrics in neutral.
    - Begin scapula musculature isometrics/sets.
    - Begin active assisted elbow ROM.
    - Pulleys (flexion and abduction) – as long as greater than 90 degrees of PROM.
    - Continue cryotherapy.
- **Postoperative Day #11-21:**
    - Continue above exercises.
    - Continue to progress PROM as motion allows.
    - Gradually progress to AAROM in pain free ROM.
    - Progress active distal extremity exercise to strengthening as appropriate.
    - Restore active elbow ROM.

Phase II – Passive and Active Rang of Motion (Weeks 1-6)

- **Goals:**
    - Continue PROM progression and gradually restore full PROM.
    - Gradually restore active motion.

    - Control pain and inflammation.
    - Allow continued healing of soft tissue.
    - Re-establish dynamic shoulder stability.
- **Precautions:**
    - Sling should be used as needed for sleeping and removed gradually over the course of one to two weeks after surgery.
    - While lying supine, a small pillow roll or towel should be placed behind elbow to avoid shoulder hyperextension/anterior capsule stretch.
    - Begin shoulder AROM against gravity.
    - No heavy lifting of objects (no heavier than a coffee cup).
    - No supporting of body weight by hand and arms.
    - No sudden jerking motions.
- **Criteria for progression to the next phase:**
    - Tolerates PROM and AAROM program, isometric program.
    - >140 degrees PROM flexion.
    - >120 degrees PROM abduction.
    - >60 degrees PROM ER in plane of scapula.
    - >70 degrees PROM IR in plane of scapula.
    - Be able to actively elevate shoulder against gravity with good mechanics to 100 degrees.
- **Week 3:**
    - Continue with PROM, AAROM, isometrics.
    - Scapular strengthening.
    - Begin assisted horizontal adduction.
    - Progress distal extremity exercises with light resistance as appropriate.
    - Gentle joint mobilizations as indicated.
    - Initiate rhythmic stabilization.
    - Continue use of cryotherapy for pain and inflammation.
- **Week 4:**
    - Begin active forward flexion, internal rotation, external rotation, and abduction in supine position, in pain free ROM.
    - Progress scapular strengthening exercises.
    - Wean from sling entirely.
    - Begin isometrics of rotator cuff and periscapular muscles.

Phase III – Active Rang of Motion, & Mild-Moderate Strengthening Exercises (Weeks 6-12)

- **Goals:**
    - Gradual restoration of shoulder strength, power, and endurance.

        - Optimize neuromuscular control.
        - Gradual return to functional activities with involved upper extremity.
- **Precautions:**
    - No heavy lifting of objects (no heavier than 5 lbs).
    - No sudden lifting or pushing activities.
    - No sudden jerking motions.
- **Criteria for progression to the next phase:**
    - Tolerates AA/AROM.
    - >140 degrees AROM flexion supine.
    - >120 degrees AROM abduction supine.
    - >60 degrees AROM ER in plane of scapula supine.
    - >70 degrees AROM IR in plane of scapula supine.
    - Be able to actively elevate shoulder against gravity with good mechanics to at least 120 degrees.
- **Week 6:**
    - Increase anti-gravity forward flexion, abduction as appropriate.
    - Active IR and ER in scapular supine.
    - Advance PROM as tolerated, begin light stretching as appropriate.
    - Continue PROM as needed to maintain ROM.
    - Initiate assisted IR behind back.
    - Begin light functional activities.
- **Week 8:**
    - Begin progressive supine active elevation (anterior deltoid strengthening) with light weights (1-3 lbs) and variable degrees of strengthening.
- **Weeks 10-12:**
    - Begin resisted flexion, abduction, external rotation (therbands, sport cords).
    - Continue progressing internal and external strengthening.
    - Progress internal rotation behind back from AAROM to AROM as ROM allows (avoid stress on anterior capsule).

Phase IV – Strengthening Equals Autotherapization (12 Weeks-Beyond)

- **Goals:**
    - Maintain full non-painful active ROM.
    - Enhance functional use of UE.
    - Improve muscular strength, power, and endurance.
    - Gradual return to more advanced functional activities.
    - Progress closed chain exercises as appropriate.
- **Precautions:**

        - Avoid exercise and functional activities that put stress on the anterior capsule and surrounding structures (i.e. no combined ER/ABD above 80 degrees of abduction).
        - Ensure gradual progression of strengthening.
- **Criteria for discharge from skilled therapy:**
    - Patient able to maintain full non-painful active ROM.
    - Maximized functional use of UE.
    - Maximized muscular strength, power, and endurance.
    - Patient has returned to more advanced functional activities.
- **Week 12+:**
    - Typically patient is on just a home exercise program by this point, 3-4x/week.
    - Gradually progress strengthening program.
    - Gradual return to moderately challenging functional activities.
- **4-6 Months:**
    - Return to recreational hobbies, gardening, sports, golf, doubles tennis.

Reverse TSA

The intent of this protocol is to provide the physical therapist with a guideline/treatment protocol for the postoperative rehabilitation management for a patient who has undergone a Reverse Total Shoulder Arthroplasty (rTSA). It is by no means intended to be a substitute for a physical therapist's clinical decision making regarding the progression of a patient's postoperative rehabilitation based on the individual patient's physical exam/findings, progress, and/or the presence of postoperative complications. If the physical therapist requires assistance in the progression of a postoperative patient who has had rTSA the therapist should consult with the referring surgeon.
The scapular plane is defined as the shoulder positioned in 30 degrees of abduction and forward flexion with neutral rotation. ROM performed in the scapular plane should enable appropriate shoulder joint alignment.

Shoulder Dislocation Precautions:

- **No shoulder motion behind back. (NO combined shoulder abduction, internal rotation, and extension.)**
- **No glenohumeral (GH) extension beyond neutral.**

- Precautions should be implemented for 12 weeks postoperatively unless surgeon specifically advises patient or therapist differently.

Surgical Considerations:
The surgical approach needs to be considered when devising the postoperative plan of care.

- Traditionally rTSA procedure is done via typical deltopectoral approach, which minimizes surgical trauma to the anterior deltoid.
- Some surgeons perform this procedure via a superior approach, retracting the anterior deltoid from the anterior lateral one third of the clavicle. This allows for superior exposure to the GH joint between the retracted anterior deltoid and the clavicle. Upon surgical closure the anterior deltoid is sutured back to its anatomical location. In these cases early deltoid activity is contraindicated. We recommend a variation of the below for patients who have had a superior approach. Patient's should use a sling for 6 weeks, not to begin deltoid isometrics for at least four weeks postoperatively, not to begin active range of motion (AROM) flexion for at least six weeks, and not begin deltoid strengthening for at least 12 weeks postoperatively.

- **The start of this protocol is delayed 3-4 weeks following rTSA for a revision and/or in the presence of poor bone stock based on surgeon's assessment of the integrity of the surgical repair. In the case of a delayed start to physical therapy adjust below timeframes so that day 1 is the first day of physical therapy.**

Progression to the next phase based on Clinical Criteria and Time Frames as Appropria.

Phase I – Immediate Post Surgical Phase/Joint Protection (Day 1-6 Weeks)

- **Goals:**
    - Patient and family independent with:
        - Joint protection.
        - Passive range of motion (PROM).

        - Assisting with putting on/taking off sling and clothing.
        - Assisting with home exercise program (HEP).
        - Cryotherapy.
    - Promote healing of soft tissue/maintain the integrity of the replaced joint.
    - Enhance PROM.
    - Restore active range of motion (AROM) of elbow/wrist/hand.
    - Independent with activities of daily living (ADL's) with modifications.
    - Independent with bed mobility, transfers, and ambulation or as per pre-admission status.
- **Phase I Precautions:**
    - Sling is worn for 3-4 weeks postoperatively and only removed for exercise, and bathing once able. The use of a sling often may be extended for a total of 6 weeks, if the current rTSA procedure is a revision surgery.
    - While lying supine, the distal humerus/elbow should be supported by a pillow or towel roll to avoid shoulder extension. Patients should be advised to "always be able to visualize their elbow while laying supine."
    - No shoulder AROM.
    - No lifting objects with operative extremity.
    - No supporting of body weight with involved extremity.
    - Keep incision clean and dry (no soaking/wetting for 2 weeks); No whirlpool, Jacuzzi, ocean/lake wading for 4 weeks.
- **Acute Care Therapy (Day 1-4):**
    - Begin PROM in supine after complete resolution of interscalene block.
        - Forward flexion and elevation in the scapular plane in supine to 90 degrees.
        - External rotation (ER) in scapular plane to available ROM as indicated operative findings. Typically around 20-30 degrees.
        - No Internal Rotation (IR) range of motion (ROM).
    - Active/Active Assisted ROM (A/AROM) of cervical spine, elbow, wrist, and hand.
    - Begin periscapular sub-maximal pain-free isometrics in the scapular plane.
    - Continuous cryotherapy for first 72 hours postoperatively, then frequent application (4-times a day for about 20 minutes).
    - Insure patient is independent in bed mobility, transfers, and ambulation.
    - Insure proper sling fit/alignment/use.
    - Instruct patient in proper positioning, posture, initial home exercise program.
    - Provide patient/family with written home program including exercises and protocol information.

- **Days 5-21:**
    - Continue all exercises as above (typically 2-3 times a day).
    - Begin sub-maximal pain-free deltoid isometrics in scapular plane (avoid shoulder extension when isolating posterior deltoid).
    - Frequent (4-5 times a day for 20 minutes) cryotherapy.
- **Weeks 3-6:**
    - Progress exercise listed above.
    - Progress PROM:
        - Forward flexion and elevation in the scapular plane in supine to 120 degrees.
        - ER in scapular plane to tolerance, respecting soft tissue constraints.
    - Gentle resisted exercise of elbow, wrist, and hand.
    - Continue frequent cryotherapy.

Criteria for progression to the next phase (Phase II)**:**

- Tolerates shoulder PROM and isometrics; and, AROM- minimally resistive program for elbow, wrist, and hand.
- Patient demonstrates the ability to isometrically activate all of components of the deltoid and periscapular musculature in the scapular plane.

Phase II – Active Range of Motion/Early Strengthening Phase (Weeks 6-12)

- **Goals:**
    - Continue progression of PROM (full PROM is not expected).
    - Gradually restore AROM.
    - Control pain and inflammation.
    - Allow continued healing of soft tissue/do not overstress healing tissue.
    - Re-establish dynamic shoulder and scapular stability.
- **Precautions:**
    - Due to the potential of an acromin stress fracture one needs to continuously monitor exercise and activity progression of the deltoid. A sudden increase of deltoid activity during rehabilitation could lead to excessive acromin stress. A gradually progressed free program is essential.
    - Continue to avoid shoulder hyperextension.

        - In the presence of poor shoulder mechanics avoid repetitive shoulder AROM exercises/activity.
        - Restrict lifting of objects to no heavier than a coffee cup.
        - No supporting of body weight by involved upper extremity.
- **Weeks 6-8:**
    - Continue with PROM program.
    - At 6 weeks post op start PROM IR to tolerance (not to exceed 50 degrees) in the scapular plane.
    - Begin shoulder AA/AROM ad appropriate.
        - Forward flexion and elevation in the scapular plane in supine with progression to sitting/standing.
        - ER and IR in the scapular plane in supine with progression to sitting/standing.
    - Initiate gentle scapulothoracic rhythmic stabilization and alternating isometrics in supine as appropriate. Minimize deltoid recruitment during all activities/exercises.
    - Progress strengthening of elbow, wrist, and hand.
    - Gentle glenohumeral and scapulothoracic joint mobilizations as indicated (Grade I and II).
    - Continue use of cryotherapy as needed.
    - Patient may begin to use hand of operative extremity for feeding and light activities of daily living including dressing, washing.
- **Weeks 9-12:**
    - Continue with above exercises and functional activity progression.
    - Begin gentle glenohumeral IR and ER sub-maximal pain free isometrics.
    - Begin gentle periscapular and deltoid sub-maximal pain free isotonic strengthening exercises. Begin AROM supine forward flexion and elevation in the plane of the scapula with lilght weights (1-3 lbs or .5-1.4kg) at varying degrees of trunk elevation as appropriate (i.e. supine lawn chair progression with progression to sitting/standing).
    - Progress to gentle glenohumeral IR and ER isotonis strengthening exercises in sidely position with light weights (1-3 lbs or .5-1.4kg) and/or with light resistance resistive bands or sport cords.

Criteria for progression to the next phase (Phase III):

- Improving function of shoulder.

- Patient demonstrates the ability to isometrically activate all components of the deltoid and periscapular musculature and is gaining strength.

Phase III – Moderate Strengthening (Weeks 12+)

- **Goals:**
  - Enhance functional use of operative extremity and advance functional activities.
  - Enhance shoulder mechanics, muscular strength, and endurance.
- **Precautions:**
  - No lifting of objects heavier than 2.7 kg (6 lbs) with the operative upper extremity.
  - No sudden lifting or pushing activities.
- **Weeks 12-16:**
  - Continue with the previous program as indicated.
  - Progress to gentle resisted flexion, elevation in standing as appropriate.

Phase IV – Continued Home Program (Typically 4+ Months Postop)

- **Typically the patient is on a home exercise program at this stage to be performed 3-4 times per week with the focus on:**
  - Continue strength gains.
  - Continued progression toward a return to functional and recreational activities within limits as identified by progress made during rehabilitation and outlined by surgeon and physical therapist.

Criteria for discharge from skilled therapy:

- Patient is able to maintain pain free shoulder AROM demonstrating proper shoulder mechanics. (Typically 80-120 degrees of elevation with functional ER of about 30 degrees.)
- Typically able to complete light household and work activities.

Nonoperative Shoulder Dislocation Protocol

Guidelines:

- Weeks 0-4: reestablish full motion. Slow muscle atrophy. Decrease pain/inflammation. Allow capsular healing.
    - AAROM w/ wand to tolerance
    - IR/ER at side, progress to 30 degrees abduction then advance to 90 degrees abduction as pain subsides
    - Submax isometrics for all shoulder musculature
    - Gentle joint mobs and PROM
    - Modalities PRN
    - *If greater tuberosity fracture, avoid active abduction. Start with supine PROM and advance to upright PROM
- Weeks 4-8: increase dynamic stability, strength. Maintain full ROM.
    - Isotonic strengthening: rotator cuff, scapular stabilizer, deltoid, biceps, triceps
    - Rhythmic stabilization: basic, intermediate, advanced
- Weeks 8-12: Increase neuromuscular control especially in apprehension position, progress dynamic stability, increase overall strength
    - Continue isotonics
    - Introduce plyometrics
- Return to activity: Progressively increase activities for full functional return
    - Continue isotonics
    - Advance plyometrics
    - HEP